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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/943,744	08/30/2001	Charles A. Howland	W0490/7028 RJP	8554

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EXAMINER

PIERCE, JEREMY R

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 01/24/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/943,744

Applicant(s)

HOWLAND, CHARLES A.

Examiner

Jeremy R. Pierce

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 138-198 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 138-198 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Amendment B has been filed on December 16, 2002 as Paper No. 6. Claims 138, 166, 169, 170, 175, and 194 have been amended. Claims 199-201 have been cancelled. Claims 138-198 are now pending.
2. The Statement under 37 CFR 1.132 filed January 10, 2003 as Paper No. 7 is insufficient to overcome the rejection of claims 138-198 based upon the Fels et al. (U.S. Patent No. 5,514,457), Howland (U.S. Patent No. 5,565,264), Opitz (European Patent No. 962,562), Toon (U.S. Patent No. 5,248,548), and Prickett (U.S. Patent No. 5,853,885) references as set forth in the last Office action because the Statement is not commensurate in scope with the claims or the prior art references. Applicant argues Fels et al. is distinguishable from the present invention's blended fibers. However, Applicant's claims do not set forth any "blended fibers." Furthermore, Applicant does not provide any evidence to indicate why the core spun yarns of Fels et al. could not be woven according to the Howland reference. Applicant supports his argument by saying the yarns of Fels et al. are too coarse for the weave pattern of Howland. However, Fels et al. say the yarn decitex can be as small as 200 (column 5, line 61), which is the size of the yarns used in Howland (column 3, line 49). The Examiner does not see the incompatibility of the two references, because the ranges of yarn deniers overlap. Applicant asserts that as the yarns of Fels et al. become smaller, they become increasingly fragile, thus making them unsuitable for use in the Howland construction.

Again, Applicant fail to set forth any evidence to show why this is the case.

Furthermore, Fels et al. specifically disclose that there are no limits on filament and yarn titers for the core material, and that finer titers are preferred (column 3, lines 47-50).

Applicant argues that Fels et al. would not have a substantially parallel and uniform distribution. However, Applicant has failed to set forth definite structure of what “substantially parallel” means, as set forth below in the 112 rejections. Applicant also states the yarns of Opitz would not be operable in the Howland construction, but again, sets forth no evidence as to why this is the case. It is true that when weaving, using coarser yarns does mean that you cannot get the amount of yarns per inch in the weave pattern that you might be able to attain with finer yarns. However, does this necessarily translate into the “round packed cover factor” of the weave also? Coarser yarns can still overlap when they are woven, and overlap of the yarns is what creates a higher “round packed cover factor.”

Drawings

3. This application has been filed with informal drawings, which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 138-198 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The amended claims now recite the fibers are oriented "substantially parallel." The Applicant says that this limitation is described and illustrated in the specification. However, the Examiner cannot find any reference in the specification to "substantially parallel," and the informal drawings do nothing to show the fibers in any type of parallel configuration.

6. Claims 138-198 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The application contains no description as to what fibers being laid in a "substantially parallel" fashion would look like. Nor is there a method given for orienting the fibers "substantially parallel" to one another.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 138-198 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims recite that one fiber type is "substantially parallel" to another fiber type. This is indefinite because the specification does not indicate the manner in which these fiber types are parallel to each other. Are they aligned in a parallel fashion within the same bundle? Are separate bundles containing different fiber types parallel to one another, even though the individual filaments within the bundle are not? Furthermore, if two fibers were parallel, how would being "substantially" parallel alter their status? Generally, if two fibers are parallel, they do not intersect. However, Applicant has stated in the arguments section that "parallel" is associated with Figures 3A and 3B of the present invention. Figure 3A clearly shows two fibers that not only intersect, but twist around each other. Although "parallel" typically means two fibers that do not intersect, Applicant clearly desires another meaning since Figure 3A shows two fibers intersecting repeatedly. The Examiner cannot resolve this contradiction of the word "parallel" from looking at the specification because the word "parallel" does not even appear in the specification. Therefore, the Examiner cannot give the "substantially parallel" limitation in the claim any substantial weight because it is so unclear as to what this limitation is trying to set forth.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 138-141, 147-191, and 194-198 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fels et al. (U.S. Patent No. 5,514,457) in view of Howland (U.S. Patent No. 5,565,264).

Fels et al. disclose a fiber bundle comprising core fiber of high strength fiber, such as Twaron (column 3, lines 28-35) and dyeable sheath fiber made of cotton, polyester, polyamide, or polyacrylonitrile (column 3, lines 58-65) that is useful in making protective clothing. Fels et al. does not disclose the round packed cover factor of the fabric, but does state that a high-density weave is most desirable (column 7, lines 38-46). Howland teaches densely woven fabrics useful in the manufacture of protective clothing (abstract). Howland does not disclose a "round packed cover factor" of 75% on the fill yarn and 26% on the warp yarn. However, "round packed cover factor" is only an alternative method for expressing the cover of a fabric. Since Howland already disclose densely woven fabrics, with a cover factor of up to 140% (column 4, line 59), the Examiner will assume that this cover value is in line with the "round packed cover factor" that the Applicant now claims. If not, it would have been obvious to a person having ordinary skill in the art to provide a fabric with the "round packed cover factor" that is claimed in claims 138-140, since doing so would simply be optimizing the density of the weave to provide a fabric with a desired penetration resistance. It has been held that

discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Fels et al. also do not disclose the fibers to be oriented substantially parallel to one another. Fels et al. do disclose the second fiber type may be wrapped around the core of the first fiber type (column 5, lines 28-29). This falls within Applicant's limitation of "substantially parallel" because Applicant says in the arguments that Figure 3A, showing two fibers twisted together, represents "substantially parallel." The Examiner asserts that a wrapped fiber has a similar structure to a twisted fiber, in that both involve wrapping one fiber around another. With regard to claim 141, all yarns would comprise fibers of the first type and fibers of the second type, since the yarns of Fels et al. are fiber bundles. With regard to claim 147, Fels et al. do not specifically teach that the high strength core fibers have a tensile breaking strength of at least 10 g/Denier. However, the Examiner notes that Fels et al. disclose core material that is known to possess the strength required by Applicant's limitation, and the scope of Fels et al. is in the art of protective clothing, which normally provides fibers with a breaking strength of at least 10 g/Denier. The Examiner asserts that the limitation of tensile breaking strength would be inherent to the material disclosed by Fels et al. If not, then it would have been obvious to a person of ordinary skill in the art to create the article of Fels et al. with core fibers having a tensile strength of at least 10 g/Denier in order to create a protective garment with sufficient strength for puncture resistance. With regard to claim 148, Fels et al. disclose using Twaron (column 3, line 32). With regard to claims 149, 163, and 172, Fels et al. do not disclose that two different fiber types having high strength need to be present in the

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fiber bundle. It would have been obvious to one having ordinary skill in the art to provide two different high-strength fibers in the fiber bundles of Fels et al. in order to create a fiber bundle with enhanced strength and diverse properties. With regard to claims 150 and 151, the second fiber type can be made from polyester, polyamide, or cotton (column 3, lines 60-65). With regard to claims 155-157, Fels et al. disclose a yarn comprising 40% aromatic fiber (column 8, lines 51-52). With regard to claims 158-161, although Fels et al. do not disclose fiber bundles to comprise at least 85% high-strength fiber, it would have been obvious to a person having ordinary skill in the art to modify the fiber bundles to include at least 85% high-strength fiber in order to create a fabric with increased strength. With regard to claim 164, Fels et al. does not disclose the number of fibers present in the bundle, but do teach that there are no limits on the filaments and yarn titers (column 3, line 47). The presence of 60 to 100 fibers in a fiber bundle would depend on the individual filament sizes and the desired thickness of the overall fiber bundle. It would have been obvious to a person having ordinary skill in the art to modify the fiber bundle of Fels et al. to contain 60 to 100 fibers in order to optimize the fiber bundle to its desired thickness and desired individual filament size. With regard to claims 165, and 177-190, selection of size and denier of individual filaments and fiber bundle would be obvious modification to a person having ordinary skill in the art, depending on the desired characteristics of the fabric to be made with the fiber bundles, especially since Fels et al. teach that there are no limits on the filaments and yarn titers (column 3, line 47). With regard to claims 166 and 194, Fels et al. do not disclose a twist multiplier for the fiber bundles. If not already inherent to the fibers of

Fels et al., it would have been obvious to one having ordinary skill in the art to create the fiber bundle of Fels et al. with a twist multiplier of at least 2.7 in order to create a sturdy fiber bundle with less chance of unraveling, since it has been held discovering an optimum value of a result effective variable involves only routine skill in the art. With regard to claim 191, spun staple fibers can form the sheath (column 3, line 55).

11. Claims 138-141, 147-191, and 194-198 are rejected under 35 U.S.C. 103(a) as being unpatentable over Opitz (European Patent No. 962,562) in view of Howland.

Opitz teaches a yarn for use in protective clothing where the core is high strength fiber and the sheath is high abrasion resistant dyeable fiber (Abstract). The core may be made from aramid fibers, polyamide fibers, or polyethylene (paragraph 15), and would have a strength of up to 27 cN/dtex (Table 1), which equals approximately 30.5 grams/denier. Opitz does not disclose the round packed cover factor of the fabric, but does state that a high-density weave is most desirable (column 7, lines 38-46).

Howland teaches densely woven fabrics useful in the manufacture of protective clothing (abstract). Howland does not disclose a "round packed cover factor" of 75% on the fill yarn and 26% on the warp yarn. However, "round packed cover factor" is only an alternative method for expressing the cover of a fabric. Since Howland already disclose densely woven fabrics, with a cover factor of up to 140% (column 4, line 59), the Examiner will assume that this cover value is in line with the "round packed cover factor" that the Applicant now claims. If not, it would have been obvious to a person having ordinary skill in the art to provide a fabric with the "round packed cover factor" that is claimed in claims 138-140, since doing so would simply be optimizing the density of the

weave to provide a fabric with a desired penetration resistance. The wrapped fiber construction of Opitz would be within the scope of Applicant's "substantially parallel" limitation as set forth above in section 10. With regard to claim 148, Opitz teaches using para-aramid fibers for the core (paragraph 15). With regard to claims 149, 163, and 172, Opitz does not disclose that two different fiber types having high strength need to be present in the fiber bundle. It would have been obvious to one having ordinary skill in the art to provide two different high-strength fibers in the fiber bundles of Opitz in order to create a fiber bundle with enhanced strength and diverse properties. With regard to claims 150-151, Opitz teaches the sheath part of the fiber to comprise polyamide, polyester, or cotton. With regard to claims 155-161, although Opitz does not disclose fiber bundles to comprise at least 85% high-strength fiber, it would have been obvious to a person having ordinary skill in the art to modify the fiber bundles to include at least 85% high-strength fiber in order to create a fabric with increased strength, as a matter of optimization for a desired strength characteristic. With regard to claim 164, Opitz does not disclose the number of fibers present in the bundle. The presence of 60 to 100 fibers in a fiber bundle would depend on the individual filament sizes and the desired thickness of the overall fiber bundle. It would have been obvious to a person having ordinary skill in the art to modify the fiber bundle of Opitz to contain 60 to 100 fibers in order to optimize the fiber bundle to its desired thickness and desired individual filament size. With regard to claims 165, and 177-190, selection of size and denier of individual filaments and fiber bundle would be obvious modification to a person having ordinary skill in the art, depending on the desired characteristics of the fabric to be

made with the fiber bundles. With regard to claims 166 and 194, Opitz do not disclose a twist multiplier for the fiber bundles. If not already inherent to the fibers of Opitz, it would have been obvious to one having ordinary skill in the art to create the fiber bundle of Opitz with a twist multiplier of at least 2.7 in order to create a sturdy fiber bundle with less chance of unraveling, since it has been held discovering an optimum value of a result effective variable involves only routine skill in the art. With regard to claims 167-168 and 197-198, the yarn is woven into protective clothing (paragraph 1). With regard to claim 191, Opitz discloses the sheath can be spun staple fibers (paragraph 39).

12. Claims 142-146 are rejected under 35 U.S.C. 103(a) as being unpatentable over Opitz or Fels et al. in view of Howland and further in view of Toon (U.S. Patent No. 5,248,548).

None of Opitz, Fels et al., or Howland disclose plying two fiber bundles where one fiber bundle is made of high strength yarn. Toon teaches high strength metallic yarns plied with non-metallic yarns and twisted are common in the art of making protective clothing (column 5, lines 34-41). It would have been obvious to one having ordinary skill in the art to ply high-strength fiber bundles with low-strength fiber bundles, since such a procedure is commonly known and practiced in the art of protective clothing.

13. Claims 192 and 193 rejected under 35 U.S.C. 103(a) as being unpatentable over Opitz or Fels et al. in view of Howland and further in view of Prickett (U.S. Patent No. 5,853,885).

None of Opitz, Fels et al., or Howland disclose using a Cotton System or a Worsted System. Prickett discloses using both the Cotton System (column 2, line 65) and the Worsted System (column 4, line 37) for spinning fibers in the manufacture of protective clothing. It would have been obvious to one having ordinary skill in the art to spin the fiber bundles of Opitz or Fels et al. using the Cotton System or the Worsted System as a matter of obvious choice in production method, since both Systems are held to be known and common in the art.

Response to Arguments

14. Applicant's arguments filed in Paper No. 6 have been fully considered but they are not persuasive.

15. Applicant argues that the meaning of Fels "dense fabric construction" in the context of his specification is not the same as in Howland's high cover factors. The Examiner agrees. Fels teaches weaving densely in the art of protective garments, and Howland teaches a more specific weave density in the art of protective garments. If Fels had taught the claimed weave density specifically itself, there would have been no need to combine it with Howland to obtain the rejection. Although Applicant urges that the yarns of Fels would be inoperable in the weave construction of Howland, no evidence has been provided to support this. It is also clear that the yarns of Fels are not too coarse for weaving according to Howland because the lower limit of yarn titer (200 dtex) in Fels is in line with what Howland teaches (200 denier). Since 200 dtex is equal to 180 denier, the yarns disclosed in Fels can actually be finer than those used in Howland to obtain the desired weave density. The Examiner does not agree with

Applicant's argument that the coarseness of the fibers in Fels would render them inoperable in the weave pattern of Howland.

16. Applicant argues the new limitation of the fibers being oriented in a "substantially parallel" fashion renders them outside the scope of Fels and Opitz. However, Applicant fails to make clear what is meant by this new limitation in the specification, drawings, and the claims. Applicant does point to Figs. 3A and 3B to illustrate what "parallel" might mean. But these figures illustrate fibers that are twisted and intersecting one another. Therefore, the Examiner must give this limitation the broadest possible meaning. Since both Opitz and Fels et al. wrapped yarns, there would inherently be filaments that "substantially parallel" to one another since Applicant has indicated that fibers that are twisted around each other are "substantially parallel." The new limitation is not specific enough to render the scope of the claims outside the Opitz and Fels et al. references.

17. Applicant argues Opitz uses yarns that are too large, and likewise not operable and not useful in the Howland context. Again, Applicant has not provided any evidence to show that larger yarn sizes cannot be used to obtain the claimed round packed cover factor.

18. Applicant argues that Toon cannot be asserted to be useful in combination with the high density weaves of Howland. However, Toon is used to teach that fibers of different types are commonly plied together in the manufacture of protective clothing, which is in the same field of endeavor as the other references.

Conclusion

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy R. Pierce whose telephone number is (703) 605-4243. The examiner can normally be reached on Monday-Thursday 7-4:30 and alternate Fridays 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (703) 308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

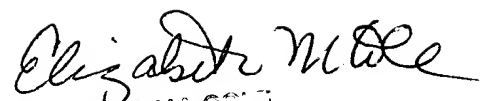
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Jeremy R. Pierce
Examiner
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January 22, 2003



ELIZABETH M. COLE
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PATENT EXAMINER